Inventor: David Cappers Steere, et al.
Docket No.: 50037.0185US01
Title: System and Method for Managing Cached Objects Using Notification Bonds
Attorney Name: Thomas S. Wong
Phone No.: 206.342.6200
Sheet 1 of 12

FIG. 1

Inventor: David Cappers Steere, et al.
Docket No.: 50037.0185US01
Title: System and Method for Managing Cached Objects Using Notification Bonds
Attorney Name: Thomas S. Wong
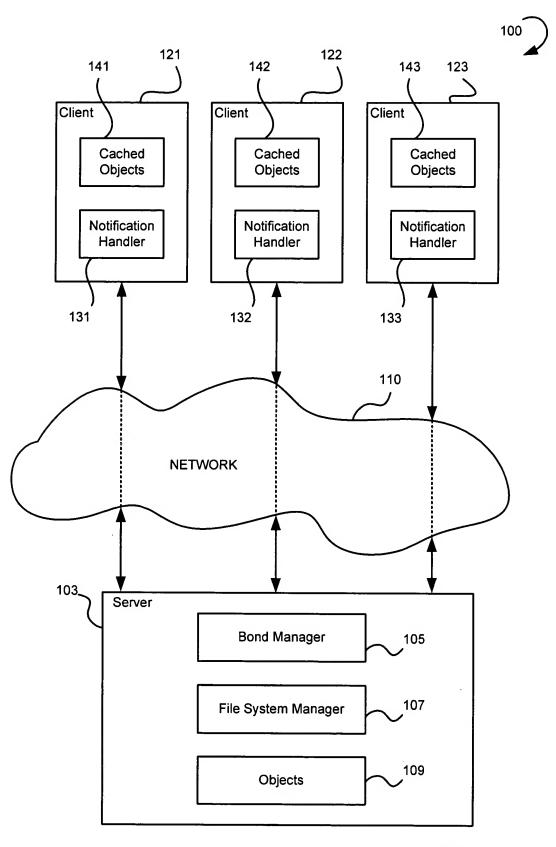Phone No.: 206.342.6200
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131

Notification Handler

Client Bond Table   220

Client 121
Server 103

205   Bond Manager   105

Filter Component   Filter Table   207

215

Server Bond Table   Service Component   210

Client table

Log table

223

Notification Logs   217

224

FIG. 2

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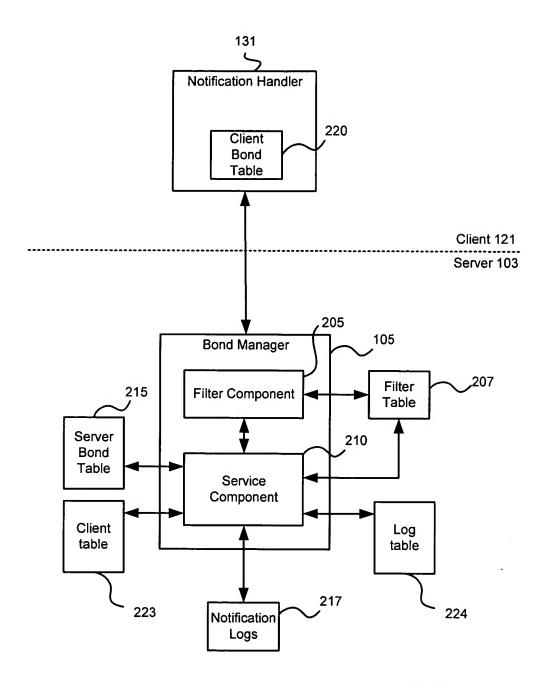Phone No.: 206.342.6200
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300

Client 121   **Server 103**

Acquiring bond

305
Bond request

310
Bond

302

Client pull

325
Request log

330
Log

322

Server push

334
Notification

336
Acknowlegment

330

Sync or Reconnect

342
Request log

344
Log

346
Bond information

348
Acknowlegment

340

FIG. 3

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207

411

Object P

421

Notification yes

412

Object Q

422

Notification yes

413

Object R

423

Notification no

414

Object S

424

Notification yes

FIG. 4

Inventor: David Cappers Steere, et al.
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Attorney Name: Thomas S. Wong
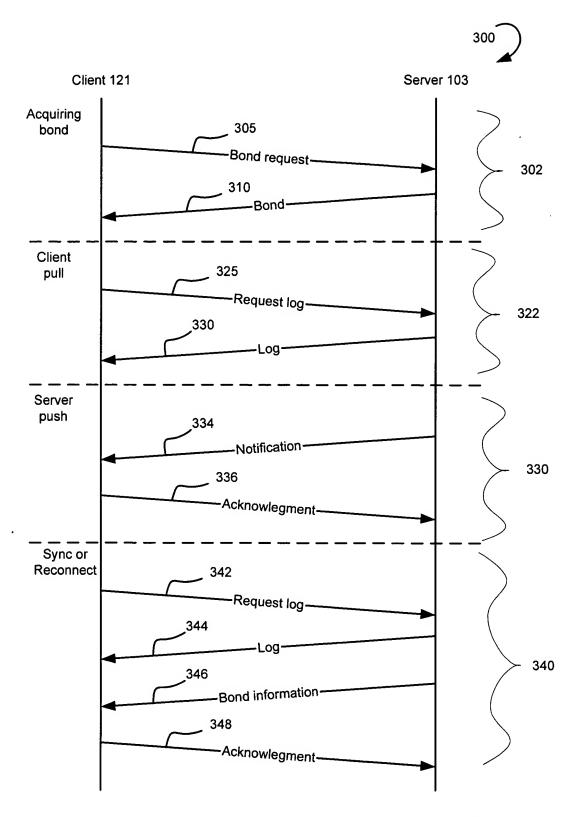Phone No.: 206.342.6200
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215

Object P	511

541	531	551
Client a	BN 176	Type 1

542	532	552
Client b	BN 748	Type 3

543	533	553
Client c	BN 345	Type 2

520

Object Q	512

Client a	BN 177	Type 2
Client d	BN 449	Type 3

Object S	513

Client a	BN 178	Type 2
Client c	BN 23	Type 1
Client e	BN 34	Type 2
Client f	BN 233	Type 3

FIG. 5

Inventor: David Cappers Steere, et al.
Docket No.: 50037.0185US01
Title: System and Method for Managing Cached Objects Using Notification Bonds
Attorney Name: Thomas S. Wong
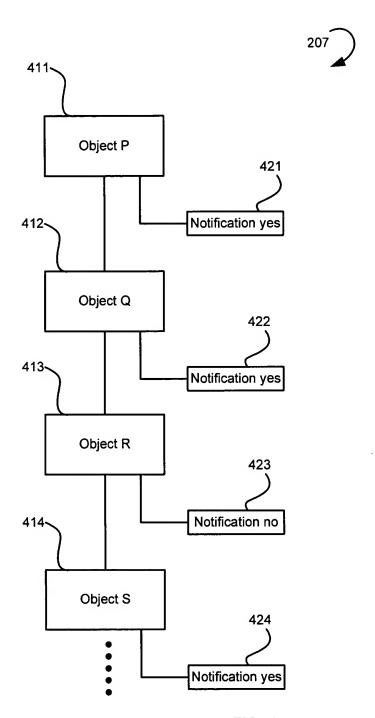Phone No.: 206.342.6200
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220

Server R11 ⟵ 611

ABN 178 ⟵ 615

offset ⟵ 617

641	631
Object P	BN 176

642	632
Object Q	BN 177

643	633
Object S	BN 178

620

Server T34 ⟵ 612

ABN 11

offset

Object P	BN 1

Object Q	BN 2

Object S	BN 3

FIG. 6

700

Start

Request bond — 710

Receive bond — 715

Add entry to bond table — 720

Update ABN — 725

Cache object — 730

End

FIG. 7

Inventor: David Cappers Steere, et al.
Docket No.: 50037.0185US01
Title: System and Method for Managing Cached Objects Using Notification Bonds
Attorney Name: Thomas S. Wong
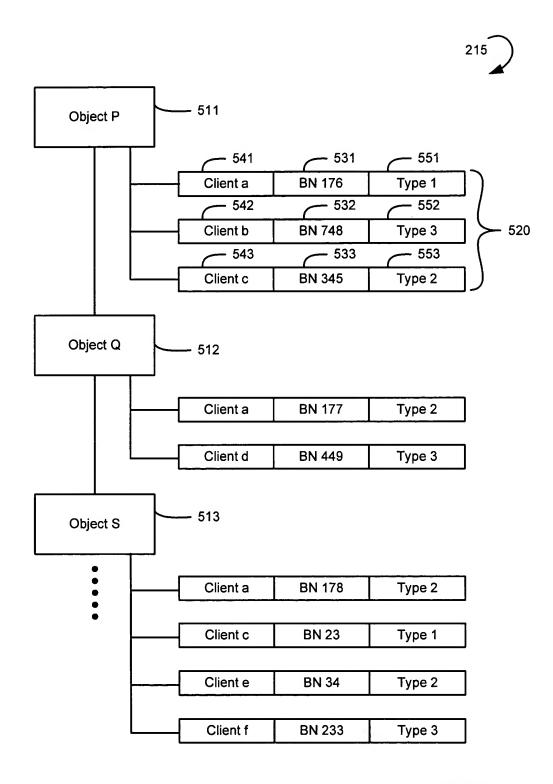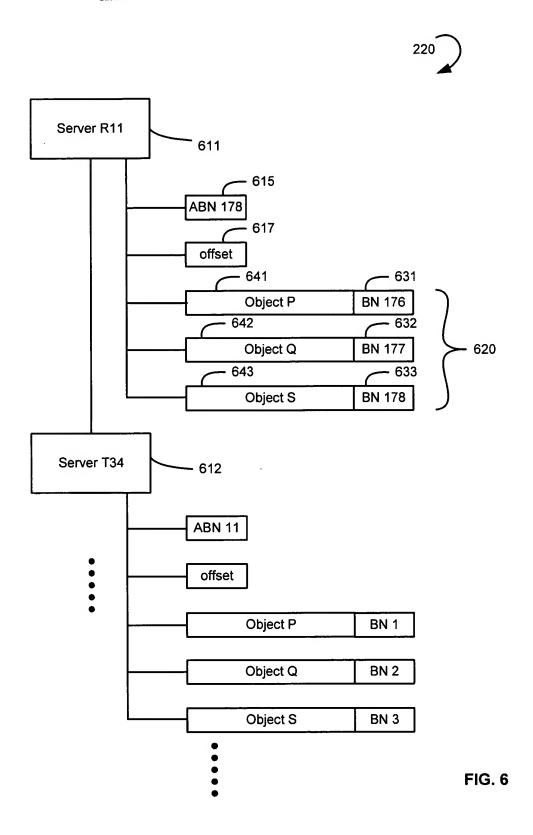Phone No.: 206.342.6200
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800

```
        ┌─────────┐
        │  Start  │
        └─────────┘
             │
             ▼
   ┌──────────────────────┐
   │ Receive bond request │ ───  810
   └──────────────────────┘
             │
             ▼
   ┌──────────────────────┐
   │    Establish bond    │ ───  815
   └──────────────────────┘
             │
             ▼
   ┌──────────────────────┐
   │ Add entry to bond table │ ───  820
   │    and filter table    │
   └──────────────────────┘
             │
             ▼
   ┌──────────────────────┐
   │      Update ABN      │ ───  825
   └──────────────────────┘
             │
             ▼
   ┌──────────────────────┐
   │  Send bond to client │ ───  830
   └──────────────────────┘
             │
             ▼
        ┌─────────┐
        │   End   │
        └─────────┘
```
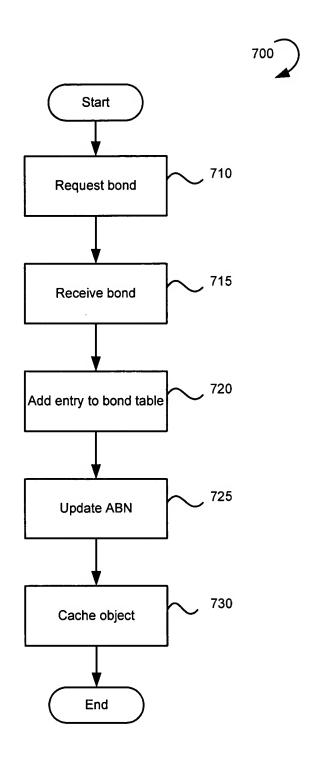
FIG. 8

Inventor: David Cappers Steere, et al.
Docket No.: 50037.0185US01
Title: System and Method for Managing Cached Objects Using Notification Bonds
Attorney Name: Thomas S. Wong
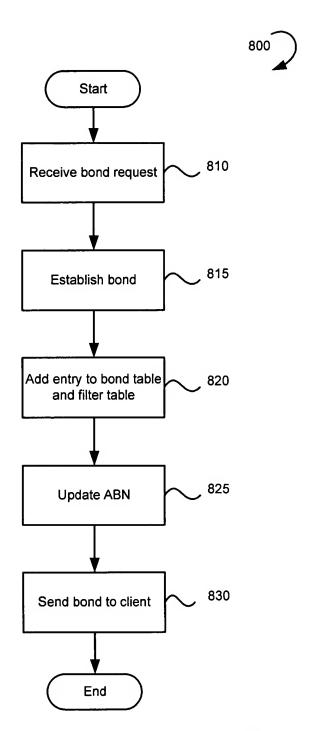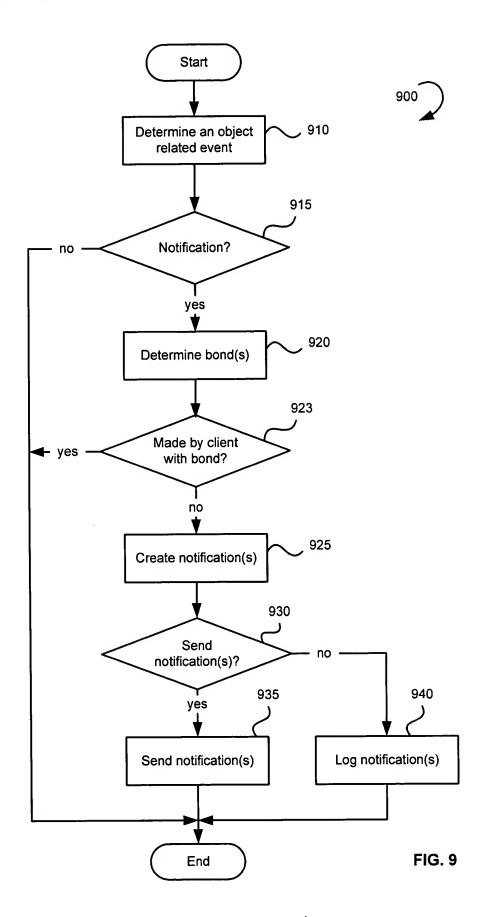Phone No.: 206.342.6200
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FIG. 9

Inventor: David Cappers Steere, et al.
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Attorney Name: Thomas S. Wong
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1000

```
                    ┌─────────────┐
                    │    Start    │
                    └──────┬──────┘
                           │
                           ▼
                ┌──────────────────────┐
                │     Authenticate     │──── 1020
                └──────────┬───────────┘
                           │
                           ▼
                ┌──────────────────────┐
                │    Compare bonds     │──── 1025
                └──────────┬───────────┘
                           │
              1030         ▼                    1050
              ◇─────────────────────◇       ┌──────────────────────┐
             ╱ Missing bonds on server? ╲── yes ─►│  Reacquire missing   │
              ◇─────────────────────◇       │        bonds         │
                           │                 └──────────┬───────────┘
                          no ◄──────────────────────────┘
                           │
              1040         ▼                    1045
              ◇─────────────────────◇       ┌──────────────────────┐
             ╱ Missing bonds on client? ╲── yes ─►│  Update bond table   │
              ◇─────────────────────◇       └──────────┬───────────┘
                           │                            │
                          no ◄───────────────────────────┘
                           │
                           ▼
                    ┌─────────────┐
                    │     End     │
                    └─────────────┘
```
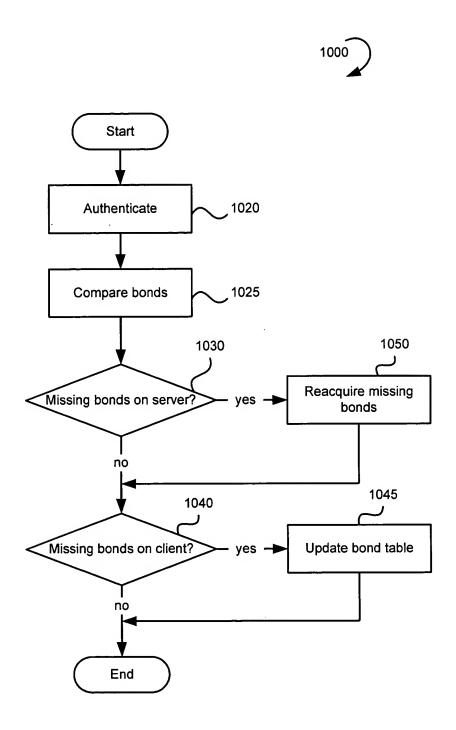
FIG. 10

Inventor: David Cappers Steere, et al.
Docket No.: 50037.0185US01
Title: System and Method for Managing Cached Objects Using Notification Bonds
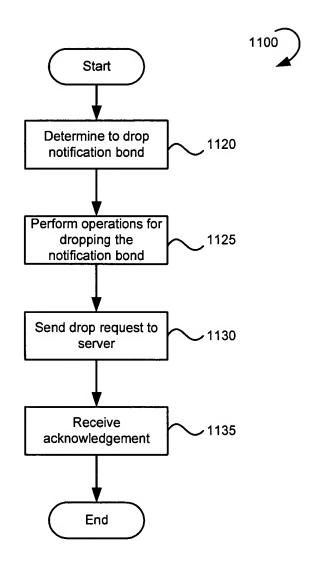Attorney Name: Thomas S. Wong
Phone No.: 206.342.6200
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1100

Start

Determine to drop notification bond — 1120

Perform operations for dropping the notification bond — 1125

Send drop request to server — 1130

Receive acknowledgement — 1135

End

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Docket No.: 50037.0185US01
Title: System and Method for Managing Cached Objects Using Notification Bonds
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Phone No.: 206.342.6200
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1200

Start

Determine to drop
notification bond   1220

Drop all notification
bonds for the client?   1225

yes

no   1229

Set ABN to 0   1227

Perform operations for
dropping the
notification bond

Perform operations
for dropping all
bonds   1228

Provide notification to
client   1230

Receive
acknowledgement   1235

End